

3

ABSTRACT

5 An optical-ready substrate made at least in part of a first semiconductor material and
having a front side and a backside, the front side having a top surface that is of sufficient quality
to permit microelectronic circuitry to be fabricated thereon using semiconductor fabrication
processing techniques. The optical-ready substrate includes an optical signal distribution circuit
fabricated on the front side of the substrate in a first layer region beneath the top surface of the
substrate. The optical signal distribution circuit is made up of interconnected semiconductor
10 photonic elements and designed to provide signals to the microelectronic circuitry to be
fabricated thereon.